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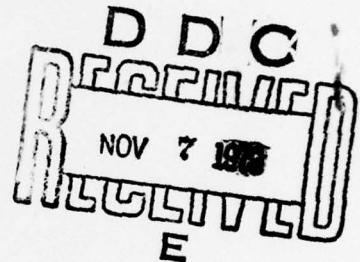
RELIABILITY OF THE ATTITUDES TOWARD WOMEN SCALE (AWS) AND
THE PERSONAL ATTRIBUTES QUESTIONNAIRE (PAQ)

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Abstract

The stability and internal consistency of Spence and Helmreich's sex-role scales, the Attitudes toward Women Scale (AWS) and Personal Attributes Questionnaire (PAQ), are reported. An entire first year class of 1,007 male and 78 female cadets at the U. S. Military Academy were given a battery of psychological tests before and after cadet basic training, a two and one-half month period. The AWS and PAQ proved to be highly reliable, comparable to other frequently used psychological tests. This psychometric information encourages researchers to make further use of these sex-role scales.

Reliability of the Attitudes Toward Women Scale (AWS)
and the Personal Attributes Questionnaire (PAQ)¹

In recent years, we have seen a dramatic increase in the volume of empirical research directed toward the issue of sex-roles. Perhaps the most telling evidence for this trend is the presence of this journal, devoted exclusively to the topic. One important catalyst to this high level of activity has been the development of research instruments specifically designed to measure concepts important to understanding sex-role phenomena. Two of the most extensively used instruments of this type are the Attitudes toward Women Scale (AWS) and the Personal Attributes Questionnaire (PAQ) (Spence & Helmreich, 1978).

The AWS measures attitudes concerning the rights, roles, obligations, and privileges that women should have in modern society. It provides scores along a continuum ranging from endorsement of traditional sex-roles to an egalitarian view of the roles of women and men.

The PAQ is a self-concept scale. Items in this scale can be classified into three general categories: (a) characteristics that are generally regarded as being highly masculine and that are desired by both men and women (PAQ M), (b) qualities that are more stereotypically ascribed as feminine and that are positively valued by both women and men (PAQ F), and (c) personality attributes that are desirable for one gender and undesirable for the other (PAQ M-F). The M-F score is like a traditional, unidimensional masculinity-femininity scale with high scores indicating masculinity and low scores reflecting femininity. The subscales were designed, and shown to be, independent. Spence and Helmreich (1978) use the combination of each respondent's M and F scores to classify that person as androgynous, masculine, feminine, or

undifferentiated in his or her self concept.

In their several publications describing these two instruments, Spence and Helmreich have presented surprisingly limited reliability information (Spence & Helmreich, 1972, 1978; Spence, Helmreich & Stapp, 1973, 1974). For the AWS, they reported only one estimate of internal consistency; coefficient alpha was .91 for a 15-item version of the scale for a college student sample of unspecified size (Spence & Helmreich, 1978, p. 39). Also, only one estimate of internal consistency was available for the PAQ; Spence and Helmreich (1978, p. 35) reported coefficient alpha values of .85, .82, and .78 for the PAQ M, PAQ F, and PAQ M-F, respectively, in a college student sample of unspecified size. No test-retest reliability information has been provided for either the AWS or the PAQ. The objective of the present article is to further examine the reliability of these two measures.

The United States Military Academy's Project Athena (Vitters, Note 1) provided an especially good opportunity to examine the reliability of these two measures. The purpose of Project Athena is to examine the impact of admitting women to the military academy on both the institution and individual cadets. Part of this research project has involved repeated testing of the cadet population with a number of standard psychological measures, including the two Spence and Helmreich sex-role instruments. This longitudinal design provided the data necessary to assess the test-retest reliability of these measures as well as their internal consistency at different points in time.

The inclusion of several other well-known psychological measures in the Project Athena design provided an important comparative basis for evaluating the reliability of the two sex-role measures. This variable set included both attitudinal and personality scales. The personality measures were the Rotter Locus of Control (I-E), the Tennessee Self-Concept Scale (TSCS), and Sarason's Test Anxiety Scale (TAS). There was also an attitudinal measure of

organizational commitment.

Method

Materials

As several different versions of the Spence and Helmreich measures are now available, it is important to identify precisely the scales employed. The 25-item AMS, identified by Spence and Helmreich (1972) as the short version of the scale, was used throughout this study. High scores indicate an egalitarian view, while low scores represent traditional attitudes concerning the role of women.

The PAQ used in this study was the 24-item scale described by Spence and Helmreich (1978). On the basis of individuals' M and F scores, they were classified as androgynous (high M, high F), masculine (high M, low F), feminine (low M, high F), or undifferentiated (low M, low F). The norms established by Spence and Helmreich (1978) using college students were used to define high and low M and F scores (medians were 21 and 23, respectively).

In addition to the two sex-role measures, the design included the following instruments:

Tennessee Self-Concept Scale (TSCS). From this multidimensional measure of self-concept, only the composite "total positive" score is reported here. Persons with high scores on this subscale of the TSCS feel that they are worthwhile persons, and they feel and act confidently (Fitts, 1965). The scores range from 100 to 500.

Test Anxiety Scale (TAS). Sarason's (1962) 16-item scale provides a measure of anxiety in test-taking and related situations involving performance evaluation. High scores on this scale indicate high levels of reported anxiety.

Rotter I-E. The 29-item Locus of Control (I-E) Scale measures generalized expectancies for internal versus external control over life events (Rotter,

1966). The scale is scored so that high scores represent beliefs in external locus of control of reinforcement.

Organizational Commitment (O). The 15-item measure of organizational commitment, developed by Porter, Steers, Mowday, and Boulian (1974) was modified for the specific concerns of West Point. High scores on the attitude scale represent a high level of support, endorsement, and commitment to the goals and values of the academy.

Procedure

The basic design of Project Athena called for administration of the tests in early July, and again in mid-September, of 1976 to 1,007 male and 78 female freshman cadets. Cadet Basic Training, a stressful introduction to military life, intervened between these administrations. These numbers reflect some attrition (initially, there were 1,221 men and 119 women). In addition, the PAQ was administered to this entire class of cadets at five different times throughout a two-year period.

Results

The AWS and PAQ tests are reliable, as shown by the two and one-half month test-retest reliabilities and coefficient alpha measures of internal consistency listed in Table 1.

Insert Table 1 about here

A comparison of these reliability coefficients with those of the other personality and attitudinal tests administered at the same times indicates that the sex-role measures are as reliable as these other generally used psychological tests.

The test-retest reliability coefficients for the repeated PAQ testings, given in Table 2, provide even stronger evidence of the stability of scores on these scales. Over a period of two years, these scores were quite stable.

Insert Table 2 about here

As mentioned earlier, PAQ scores have been used to categorize individuals as androgynous, masculine, feminine, or undifferentiated. Cadets were classified into one of these four categories, first using their PAQ scores at time 1 and again at time 2. Table 3 shows the consistency of these classifications for male and female respondents. The principal diagonal shows the percentage

Insert Table 3 about here

of individuals placed in each category at time 1 who remained in that category after a second testing over two months later. For example, 70% of those men classified as androgynous at time 1 were classified similarly at time 2. The percentages are similar for men and women. Overall, 57% of all the men and 54% of all the women remained in the same sex-role category across testings. The rows of the table show shifts in categorization. Both women and men tended to shift to the androgynous and masculine categories after basic training. Such a shift is not surprising given the high physical performance demands of basic training.

It is also interesting to note changes in these measures across testings separated by Cadet Basic Training (CBT). Men became more traditional in their

attitudes toward women going through basic training with their female classmates (see Table 1). Men rated themselves as being both more masculine (PAQ M) and more feminine (PAQ F) after training, while women only indicated increases in their ratings of femininity. After training, both women and men exhibited increases in their self-concept (TSCS), organizational commitment (P), and the internality of their locus of control (ROTTER). Men reported that their test anxiety (TAS) increased after training. In contrast, women consistently reported high levels of test anxiety, both before and after training. Both the sex-role and other tests were significantly influenced by the events that intervened between testings. Priest, Prince and Vitters (Note 2) have described in detail these, and other changes, related to the cadet training experience.

Discussion

The decision to use any psychological measure requires adequate information about both its reliability and validity. The reliability assessment reported in the present article suggests that the reliability of both the AWS and PAQ is good. For both measures, the internal consistency coefficients were very high. Furthermore, the test-retest reliability coefficients suggest that both these scales measure relatively stable characteristics of the respondents, especially when one considers the quite dramatic nature of the experience during the test-retest interval. These reliability data, in conjunction with the construct validity data reported by Spence and Helmreich (1978), should encourage researchers to include these scales in future research requiring either a measure of attitudes toward women's role in society (the AWS) or self-perceptions of masculinity and femininity (the PAQ).

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Footnote

¹The authors appreciate the editorial comments of Dr. Brenda Major. This research was conducted under research grants from the Army Research Institute (Alan G. Vitters and Jerome Adams, Principal Investigators). The views expressed herein are the private opinions of the authors and do not necessarily reflect the policy of the U. S. Army, the U. S. Military Academy, or ARI. Send requests for reprints to: Jon Yoder, Dept. of Psychology, Washington University, Box 1125, St. Louis, Missouri 63130.

Table 1

The Reliability of the Personality and Attitude Measures

Measure: Subjects	Test-Retest Reliability	Coefficient Alpha		Means		<u>t</u>	<u>df</u>	2
		<u>Time 1</u>	<u>Time 2</u>	<u>Time 1</u>	<u>Time 2</u>			
AMS								
Total	.828	.855	.865	42.80	40.32	11.11	1106	.01
Males	.743	.831	.851	42.58	39.88	11.32	1006	.01
Females	.797	.810	.817	57.60	57.38	.35	77	ns
PAQ M								
Total	.745	.771	.765	22.64	23.40	- 6.64	1106	.01
Males	.584	.773	.765	23.09	23.98	- 7.21	1006	.01
Females	.623	.756	.738	22.05	22.03	- .07	77	ns
PAQ F								
Total	.724	.701	.706	21.22	21.76	- 5.06	1106	.01
Males	.536	.697	.717	21.50	22.10	- 5.14	1006	.01
Females	.668	.744	.651	22.22	23.14	- 2.66	77	.01
TPCS--total positive								
Total	.693	a	a	347.25	355.22	-10.50	1128	.01
Males	.693	a	a	347.32	355.40	-10.18	1052	.01
Females	.713	a	a	346.21	352.78	- 2.56	75	.01

Table 1 (continued)

Measure: Subjects	Test-Retest Reliability	Coefficient Alpha		Means		t	df	P
		Time 1	Time 2	Time 1	Time 2			
ROTTER I-E								
Total	.711	.704	.697	7.25	6.86	4.22	1106	.01
Males	.690	.707	.698	7.37	6.99	3.85	1006	.01
Females	.734	.678	.675	7.81	7.17	2.01	77	.01
TAS								
Total	.552	.726	.756	4.79	5.16	- 3.91	1106	.01
Males	.514	.714	.750	4.82	5.22	- 3.90	1006	.01
Females	.706	.757	.811	5.79	5.96	- .52	77	ns
P								
Total	.634	.696	.702	47.48	49.84	- 8.00	1106	.01
Males	.430	.696	.715	48.43	50.80	- 7.62	1006	.01
Females	.347	.701	.683	48.56	51.47	- 2.43	77	.01

^aSince the authors did not have access to the items of the TSCS, no coefficient alphas could be calculated. However, Fitts (1965) reports high internal consistency with other samples.

Note.--There is a two and one-half month span between times 1 and 2. The measures are: ANS--Attitudes toward Women Scale, PAC--Personal Attributes Questionnaire with its subscales, masculinity (M), femininity (F), TSCS--Tennessee Self-Concept Scale, ROTTER--Rotter I-E Locus of Control Scale, TAS--Test

Table 1 (continued)

Anxiety Scale, and P--Porter's measure of organizational commitment. High scores represent high levels of the characteristic measured by the scale, externality for the Rotter, and egalitarian attitudes for the AWS.

Table 2
Test-Retest Reliabilities of PAQM and PAQF

	PAQM				
	Time 1	Time 2	Time 3	Time 4	Time 5
Time 1	1.00	.62	.45	.62	.67
Time 2	.58	1.00	.52	.70	.70
Time 3	.49	.48	1.00	.63	.62
Time 4	.55	.55	.64	1.00	.68
Time 5	.41	.46	.58	.61	1.00

	PAQF				
	Time 1	Time 2	Time 3	Time 4	Time 5
Time 1	1.00	.67	.48	.57	.44
Time 2	.54	1.00	.47	.63	.62
Time 3	.46	.51	1.00	.65	.41
Time 4	.46	.46	.56	1.00	.41
Time 5	.43	.45	.51	.53	1.00

Note.--The correlations for female cadets are listed above the diagonal and for males, below it. Time 1 = June 1976 (pre-CBT), Time 2 = August 1976 (post-CBT), Time 3 = April 1977, Time 4 = August 1977, Time 5 = August 1978.

Table 3

Percentages of Cadets Classified by Sex Type Before and After Cadet Basic Training

Sex Type Time 1	Sex Type Time 2				
	MALES		FEMALES		
	Andro- gynous	Masculine	Feminine	Undifferentiated	Andro- gynous
Androgynous	<u>70</u> (214)	<u>20</u> (60)	<u>4</u> (14)	<u>6</u> (18)	<u>13</u> (4)
Masculine	<u>31</u> (146)	<u>56</u> (266)	<u>2</u> (12)	<u>11</u> (51)	<u>18</u> (4)
Feminine	<u>37</u> (23)	<u>5</u> (3)	<u>32</u> (20)	<u>26</u> (16)	<u>0</u> (0)
Undifferentiated	<u>21</u> (35)	<u>28</u> (45)	<u>7</u> (12)	<u>44</u> (72)	<u>40</u> (6)
					<u>19</u> (6)
					<u>5</u> (1)
					<u>40</u> (4)
					<u>7</u> (1)
					<u>6</u> (6)

Note.--Reading rows, the per cent of respondents in each category at time 1 is listed according to how they are classified at time 2. The sum of the percentages across rows equals 100%. The numbers in parentheses are the number of respondents in each cell.